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THE GREAT LAKES-ST. LAWRENCE LOWLAND:[1] INDUSTRIAL HEART OF CANADA

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INDUSTRIAL HEART OF CANADA

Cramped between the Canadian Shield on the north and the Appalachian Highland, the United States, and the Great Lakes on the south, is the Great Lakes-St. Lawrence Lowland. This long, narrow plain, broken in two by the neck of less productive land which ties the Canadian Shield to the Adirondack Mountains (Fig. 1),[2] is the most thoroly occupied and developed section of all Canada. Scarcely 36,000 square miles in extent, only one per cent of the area of the Dominion, it contains about sixty per cent of the Canadian population.

One of the major traits of this flat to gently rolling plain is the continuity of the farm landscape. Farm adjoins farm, with remarkably little waste land or woodland, until the margin of the Shield is reached, where a narrow transition zone, commonly less than half a mile wide, divides the Lowland farms from the continuous forest of the Shield. Another major trait is the aspect of permanence and well-being common to the numerous towns and cities. Both divisions of the Lowland—the Ontario Peninsula and the St. Lawrence Plain—are liberally sprinkled with thriving urban centers (Figs. 1, 2).

The position of many of these cities suggests that they must surely function in large measure as commercial centers. One thinks of Quebec or Montreal or Hamilton in this connection. Not at all eclipsed, however, is the industrial function. Even the smallest of the cities and many of the villages have industries in which rela-

[1] Prepared to supply data and to suggest a method of treatment for one phase of a college study of the Lowland.

[2] The Canadian Shield is indicated on the accompanying maps as the Laurentian Upland. Both names are in common use.

tively large numbers of people are employed (Fig. 2), and the Lowland contains two clusters of industrial centers of major rank in the world of manufacturing—one centering on Toronto, the other on Montreal. It should be noted, too, that the industrial activity of the Lowland is of more than local importance. In the comparative geography of Canada it looms large, for in the region

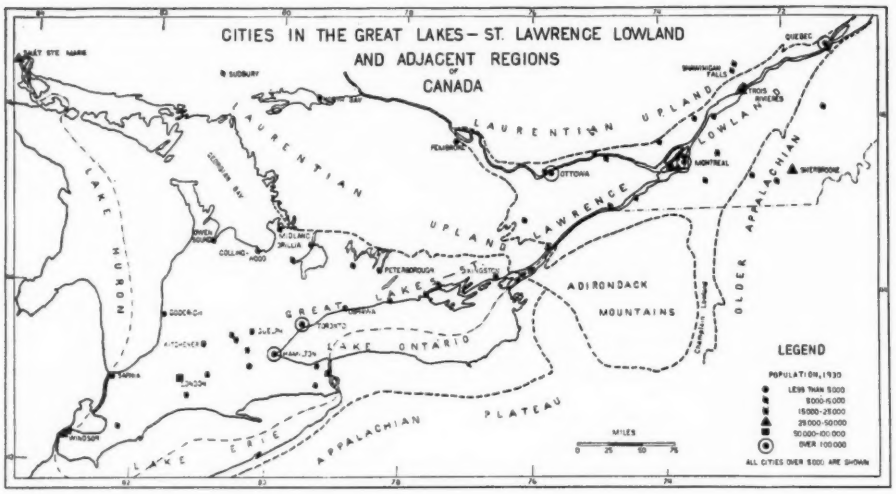

FIG. 1. Cities in the Great Lakes-St. Lawrence Lowlands

are concentrated at least eighty per cent of the industrial employees of the entire Dominion. The Lowland is truly the industrial heart of Canada.

THE DISTRIBUTION OF INDUSTRY

Concentration and Dispersion. The distribution of industry in the Lowland reveals the operation both of forces tending to concentrate the factories in a few especially favored places, and of forces tending to scatter them thruout the entire region. Clearly, the Montreal and Toronto city clusters represent a high degree of concentration. In the two master cities alone—Montreal and Toronto—are nearly two-fifths of the industrial employees of all Ontario and Quebec. On the other hand, the establishment of factories in trade centers thruout the Lowland has been favored by the wide-spread use of electricity, by the needs of local markets, and by the opportunities for processing farm products drawn from the trade area of each center. Nearly every trade center visited by the writer during a recent survey of the Ontario Peninsula revealed industrial plants

of at least local importance. Dispersion appears to be somewhat less general in the St. Lawrence Plain (Fig. 2).

The Arrangement of Industrial Centers. If the industrial centers be divided on the basis of their *situation* instead of intensity of manufacturing (as measured by number of employees), several city groups appear, all members of a given group with industrial assets and liabilities in common (Figs. 1, 2). Each of these groups is easily recognized by the observant traveler.

Particularly prominent are the cities spaced along the St. Lawrence River, from Kingston, where the river leaves Lake Ontario, to Quebec, where it widens into the St. Lawrence Estuary. These cities—Kingston, Montreal, Three Rivers, and the others—all rank high in transportation facilities, abundance and cheapness of power, and accessibility to imported raw materials. They have had a distinct advantage over other Canadian cities, moreover, in the ease with which factory laborers could be recruited from European immigrants.

As one approaches and crosses the southern edge of the St.

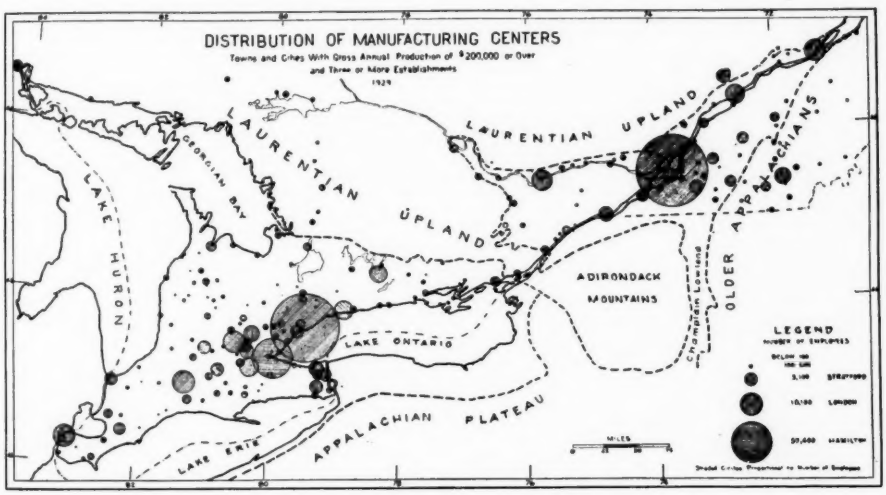

FIG. 2. Manufacturing Centers

Lawrence Plain, one encounters several smaller cities, serving, for the most part, as market centers or mining towns, but manufacturing considerable quantities of dairy products, wood pulp and paper, and other articles made of wood. On the northern margin of both the St. Lawrence Plain and the Ontario Peninsula is a line of cities which flank the Canadian Shield from Shawinigan Falls, northeast

of Montreal, to Midland, on Georgian Bay. Orillia, Peterborough, and Ottawa are in this group. This contact zone between Lowland and Shield has proved to be a favorable area in which to prepare the wood and minerals drawn from the Shield and the agricultural raw materials supplied by Lowland farms, and to use the water power which the Shield provides. Paper and saw mills, furniture factories, smelters, flour mills, and dairy-product plants are conspicuous features of these cities.

On the shores of Georgian Bay and Lake Huron are several small cities, mainly market centers, summer resorts, and receiving ports for western grain on its way to more eastern points. Yet even these cities play a part in the industrial life of the region, with an occasional pulp mill, lumber mill, smelter, or salt plant. A part of the wheat is milled, as at Goderich, and moves on eastward in the form of flour. Together with the towns and cities which border the Shield, these cities appear to mark the extreme northern margin of the industrialized area of eastern North America.

The St. Clair-Detroit riverway is bordered by several industrial centers, from Sarnia, at the southern tip of Lake Huron, to Windsor, opposite Detroit. On both land and water routes of major rank, these cities are also the favored recipients of a part of the industrial overflow from the United States. One marvels, indeed, that the Canadian side of the waterway should be relatively so far behind the American side in the extent and intensity of industrial development.

The north shore of Lake Erie is noticeably devoid of industry. Much of the immediate shoreland is marshy and less suited to urban use than sites farther inland. Avoiding the lake, market and manufacturing centers grew up along the major rail lines which cross from the Sarnia-Windsor group of cities to the Lake Ontario ports. There is a line of small manufacturing centers along the main railroad some miles north of the Erie shore, but far more prominent are the cities which make up the London and the Brantford-Guelph clusters (Figs. 1, 2). These originated, for the most part, on mill sites in one of the first settled areas of the Ontario Peninsula. Their later industrial growth has rested, in the main, on the productivity of their respective trade areas, and on the availability of cheap hydroelectric power.

By following the railroad which skirts the northern shore of Lake Erie, one comes to a double line of cities on the Niagara Peninsula—one on the Niagara River, the other on the Welland Canal. Cheap power and the necessity—in times past at least—for bulk-

breaking here, as well as proximity to the Buffalo industrial district, have all contributed to the growth of the Niagaran cities.

Beginning at the Niagara Peninsula and curving around the west end of Lake Ontario as far east as Oshawa is an almost continuous urban belt, the land between cities being largely occupied by suburban residences and market gardens. This Hamilton-Toronto Urban Belt constitutes the area of most intensive industrial life in all Canada (Fig. 2).

INDIVIDUAL INDUSTRIES

A Richly Varied Industrial Life. The industry of the Hamilton-Toronto belt is greatly diversified (Table I), a condition which gen-

TABLE I

MAJOR INDUSTRIES, TORONTO, 1930

Industry	*Number of Employees*
Clothing, women's factory	6547
Electrical apparatus	4801
Biscuits, confectionery	4296
Printing and publishing	3787
Printing and book binding	3764
Clothing, men's factory	3524
Bread, bakery products	3171
Hosiery, knitted goods	3165
Slaughtering, meat packing	2779
Dyeing, etc.	2776
Rubber goods	2399
Sheet metal works	2015

Source: Year Book of Canada, 1933.

erally prevails over the entire Lowland except on its northern margin. The manifold nature of industry reflects, in part, the wide variety of raw materials produced in the Lowland and bordering regions; in part, of course, it is a consequence of the diverse demands of the Canadian market. The various 'luxury' and 'semi-luxury' needs were particularly effective in stimulating the establishment of new plants during the World War, when European goods were largely excluded from the Canadian market. The industries initiated then are said to have continued to thrive, despite renewed competition from Europe. An analysis of the leading industries of the Lowland (Table II) will reveal their relation to the conditions on which they depend, such as raw materials, power, and labor. From Table II we shall select a few industries for brief discussion, the better to understand both the extent and the underlying causes of the industrial development of the Lowland.

Pulp and Paper Mills. The leading industry in southern Ontario and Quebec is the manufacture of wood pulp and paper. Three-fourths of the wood pulp and more than three-fourths of the paper made in Canada is produced there, the bulk of it in the Lowland or on its borders (Fig. 3). In general, the mills are on river or lake-side sites, where both a water supply and water power are available, and most of them are on the northern side of the St. Lawrence River, on modern transportation lines between the chief source of wood pulp on the north and the market on the south.

TABLE II

MAJOR INDUSTRIES, ONTARIO AND QUEBEC, 1930

Industry	*Number of Employees**
Pulp and paper	26,763
Saw mills	21,416
Electrical supplies	20,330
Hosiery, knitted goods	17,526
Castings and forgings	17,503
Railway rolling stock	16,369
Clothing, women's factory	15,869
Cotton cloth and yarn	15,431
Rubber goods	15,151
Boots, shoes, leather	13,389
Bread, bakery products	13,229
Central electric stations	11,808
Machinery	11,681
Automobiles	11,654
Printing, publishing	11,607
Biscuits, confectionery	9,261
Butter, cheese	8496
Primary iron and steel	7137

Source: Year Book of Canada, 1933.

* It is estimated that 90 per cent or more are employed in the Lowland or on its immediate borders.

The progressively greater and greater demand for paper and pulp in the United States during the last twenty-five years has given the chief impetus to the Canadian industry, which is linked, in turn, with unusual wood pulp and water power resources. The United States consumes 79 per cent of the wood pulp and 85 per cent of the paper manufactured in Canada. To meet the needs of this near-by market, which purchased three-fifths of the world's total newsprint in 1927, the mixed and coniferous forest of Quebec and Ontario have been heavily drawn upon. Altho the white pine of the Canadian Shield and Appalachian Highland was seriously depleted as early as 1900, these areas are still rich in spruce, balsam,

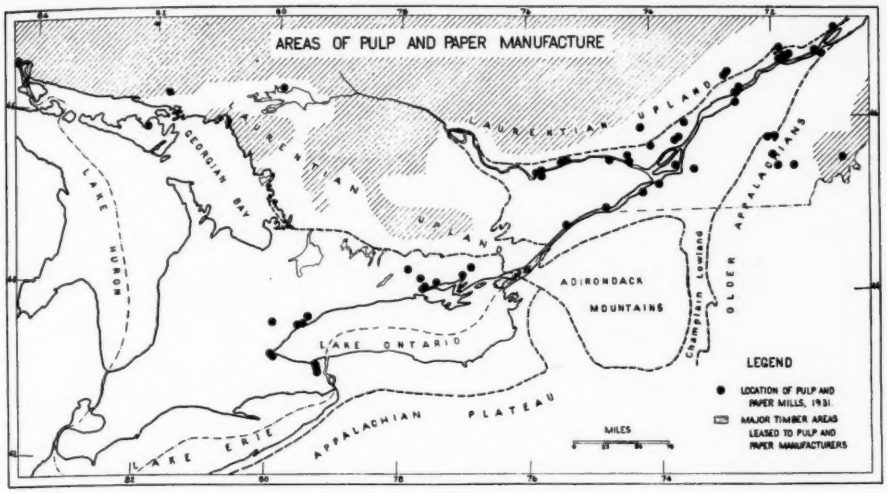

FIG. 3. Pulp and Paper Manufacturing

and hemlock, the best of materials for wood pulp.[3] Power for operating the mills has been ample, for these two regions and the Lowland have tremendous water power possibilities, due to the humid climate, to the natural reservoir capacity furnished by a myriad of swamps and lakes, and to the abundance of rapids and falls. In addition, the two Provinces have required that pulp wood cut from 'crown' lands must be manufactured into pulp in Canada. Few if any other parts of the world have so nearly ideal a combination of conditions favoring the pulp and paper industry.

Iron and Steel. Not so favorable are the conditions which the iron and steel furnaces in the Lowland must face. They suffer from the disadvantages of a restricted market, for they are shut off by tariffs from the American consumer, and open to competition from large iron and steel mills in near-by parts of the United States. The few blast furnaces are in an area of high iron consumption on lake-side sites, where they depend on American coal and iron ore (Fig. 4). Some of the steel furnaces are similarly placed, others are located at water power sites. Sixty per cent of the steel mills in the Lowland and bordering areas are electric, a fact which indicates the vital place of electrical power in the industry.

Two other phases of iron and steel manufacture have been selected for the light they throw on the industrial organization of the Lowland—the production of iron and steel castings and forg-

[3] The lowland is a hardwood region, its remaining timber in farm woodlots.

ings, and of automobiles. Figure 4 shows that the casting and forging plants are well distributed over the Lowland, a response to the demands of a modern agricultural and industrial people. The automobile factories are much more narrowly localized; at East Windsor, Walkerville, and Windsor, all on the Detroit River; and at Hamilton, Toronto, and Oshawa, on Lake Huron. Factories so situated are in close touch with the American corporations of which they

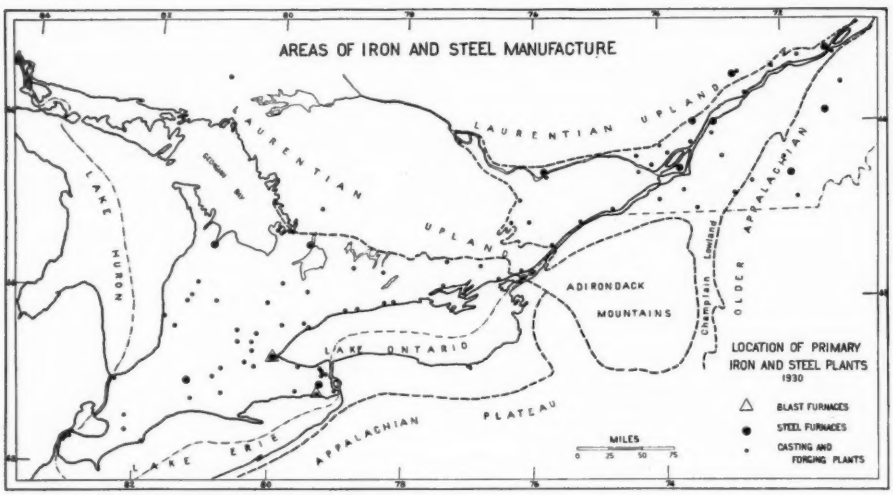

FIG. 4. Iron and Steel Manufacturing

are branches, they are favorably placed to receive fuel and automobile parts from the United States, and they are in the most highly industrial and most densely populated part of the Dominion. It is the opinion of certain Canadian students that the only marked advantage which the automobile industry finds in Canada is freedom from tariff charges—in reaching the Canadian market, and in supplying the markets in the other Dominions and in Great Britain thru export from Canadian factories.

The iron and steel industry has depended to a large extent on capital and industrial machinery and techniques from Great Britain and the United States. The same may be said of the paper industry and of every other phase of Canadian manufacture. "Canada assumes the character of an economic frontier of these older states, her life being invigorated by the surplus capital with which they provide her." Even so, Canadian enterprise and capital are steadily advancing in importance.

Creameries and Cheese Factories. Far down the list of manufactures are butter and cheese. The preparation of dairy products is doubtless as vital in the life of the smaller urban centers, however, as the manufacture of iron products and textiles in the larger ones. Like the distribution of castings and forgings, this type of manufacture is found thruout the Lowland, for dairy farms are distributed over the entire region, ending quite sharply at the edge of

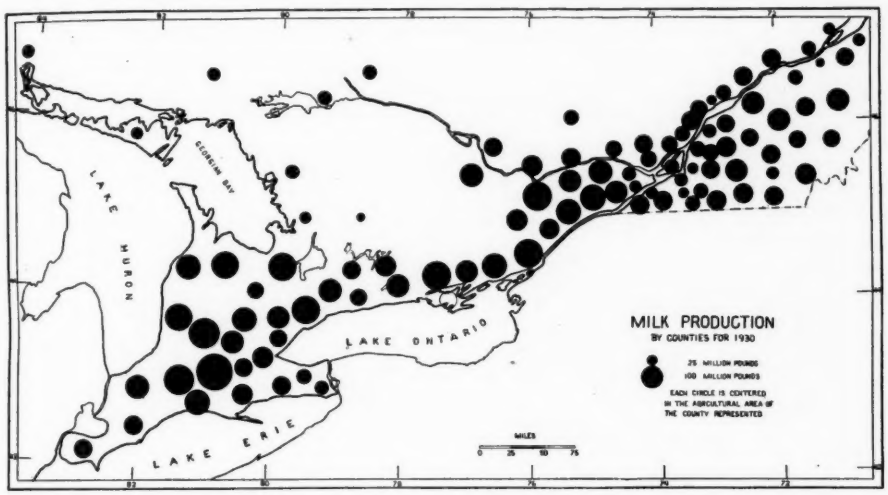

FIG. 5. Distribution of Milk Production

the Shield but extending well into the Appalachian Highland (Fig. 5). No single industry reflects more faithfully the rural mode of life of the Lowland.

THE REGIONAL SETTING

In this study of the industrial aspects of the Great Lakes-St. Lawrence Lowland, we have been concerned with three lines of inquiry: (1) the extent, intensity, and kinds of industry; (2) the evolution of industry to its present position of prominence, both in the region and in the Dominion; and (3) the relation of industrial features to associated geographic conditions. Our conclusions relative to the third problem—the organic connections between industry and other features, within and without the Lowland—will now be re-stated and summarized.

Population. Fundamental is the dependence of industry on the distribution and movement of population in and near the Lowland. This fertile, easily accessible plain was early occupied, becoming

the most densely populated area in Canada and the pivotal center of populational expansion to other parts of the Dominion. The six million inhabitants of the Lowland furnish a significant market. In addition, there are the markets in other parts of Canada, and the millions of Americans immediately to the south, an even greater market for such commodities as wood pulp and paper.

The growth of population together with the drift of rural folk to the cities furnished workers in all parts of the region, and such cities as Quebec, Montreal, and the ports on the Great Lakes, were favorably located to recruit industrial employees from the immigrant flow from Europe to the eastern shores of North America.

Farms, Mines, Lumber Camps. The productive areas surrounding the industrial centers are, it is evident, the source of raw materials as well as of laborers. The Lowland farms, largely devoted to dairying and mixed farming, provide animal and plant products needing manufacture before they reach the consumer. With a humid climate, fairly long growing season, deep soils rich in lime, and smooth to gently rolling surface, the natural productivity is high, and the prevailing types of land use tend to maintain that productivity. As the methods of farming are intensive, the production for each unit area is relatively great.

The local raw materials are supplemented in a major way by those drawn from other parts of Canada. The Lowland is like a trough into which pours the wheat of the Prairie Provinces, the ores, pulp wood, and timber of the Shield, and the dairy products, wood, and minerals of the Appalachian Highland. Raw materials from overseas or from across the International Boundary—cotton, hides, rubber—easily move into this area, tho it should be kept in mind that Canadian industry depends chiefly on raw materials produced in Canada.

Waterways and Land Routes. Probably no other part of North America of equal size has had superior transportation facilities. The canalized St. Lawrence, the Great Lakes and their canalized connections, and a dense railroad net comprise a transportation system which links the area with the great traffic lanes of the ocean on the one hand, and, on the other, with the vast rail net which spreads southward to the Gulf of Mexico and westward to the semi-arid High Plains. The relation of industry to transportation lines is clearly evidenced in the alignment of cities along the shores of the Great Lakes and the St. Lawrence and along the older railroad lines.

Coal and Water Power. Tho well removed from Canadian coal fields, the Lowland as a whole is within easy reach by land and water routes of Pennsylvania coal. In addition, freight rates are so adjusted that the Montreal-Quebec section[4] also finds it feasible to purchase coal from Nova Scotia. Easy access to coal encouraged the location of factories in the Lowland in times past and is still a vital asset, the coal is now less important than hydroelectric power.[5]

The growth of vast hydroelectric power systems in the Lowland was stimulated by the industrial needs of the area, by the difficulties experienced in obtaining fuel at normal prices during American coal and rail strikes, and, without doubt, by a desire to be nationally independent. They were made possible by unusually large water power resources. One of the more significant factors in the Canadian power situation is the location of two-thirds of its potential water power in Ontario and Quebec, in and near this, the oldest, most densely populated part of the Dominion. The Canadian share of Niagaran power is over one million horse power, the major part of it already in use. Agitation for the improvement of the Great Lakes-St. Lawrence waterway has advertised the power resources along the St. Lawrence. Vital elements in the power supply, tho less well known, are the plants along the Ottawa and St. Maurice rivers. The Canadian Shield and the Appalachian Highland are likewise rich in lake-regulated rivers obstructed here and there by glacial waterfalls.

Altho called into existence by the industrial needs of the Lowland, the hydroelectric development has in turn reacted powerfully on Lowland industries. It has stimulated their growth, favored some types of industries over others, and exerted a localizing influence of marked effectiveness. These power systems—generating plants, power lines, and distributing stations—make up one of the most significant cultural patterns of this, the industrial heart of Canada.

[4] In 1928, coal from Nova Scotia competed with Pennsylvania coal as far west as Cornwall, about 68 miles up the St. Lawrence from Montreal.

[5] The tonnage of the coal consumed by the manufacturing industries of Ontario and Quebec in 1930 was about four-fifths of the coal equivalent of the hydroelectric power used.

WHAT OIL DID TO CURAÇAO

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Curaçao is a Dutch possession in the West Indies. Under the spell of magical oil it has been changed from a quiet little cactus covered, desert isle to an island whose dominating feature is a busy oil refinery. The tall belching smoke stacks seem incongruous against the glamorous tropical background with its lurking pirate ghosts.

Curaçao, the largest of a group of islands known as the Netherland West Indies is but 36 miles long and 8 miles wide. On the south shore is the very spacious harbor of Santa Anna which possesses many natural advantages, upon which is located the town of Willemstad. Besides an easy approach it is well protected from the open sea and offers excellent mooring facilities. This splendid harbor, together with its nearness to the shores of South America which are but 60 miles away, combine to give Curaçao peculiar advantages in relation to the affairs of South America.

CURAÇAO IN THE AFFAIRS OF THE AMERICAS

During the years when all Europe was scrambling for land in the western hemisphere, Curaçao passed from the hands of the Spanish, who claimed it by right of discovery, to the British, and finally to the Dutch who have held these islands continuously since 1814.

The Netherland West Indies have figured in various ways in the affairs of the near-by Americas. In the days when pirates roamed the seas, Santa Anna Bay frequently served as a convenient place to sort the bounty, since it was so well protected from the gaze of the outside world.

Because of its nearness to Venezuela, Curaçao has often been prominent in the politics of that county, either as a base for revolutionary activities or as a refuge for unpopular politicians.

Down to the last century Curaçao has at one time or another been a depot for the slave trade as well as a center for smuggling trade with Latin America. Besides this illegitimate trade a large business has been carried on in the handling of foreign goods destined for the near-by republics of Venezuela and Colombia. It has also served as a gathering point for cargo from these countries to be

forwarded to the United States and Europe. According to recent reports, work has begun on the building of a great free port in Venezuela at Turiamo at an estimated cost of $10,000,000. The completion and use of this port will undoubtedly strike a severe blow to the volume of goods passing thru the port of Curaçao.

Oil Marketing Problems in Venezuela

When the world's search for oil turned to Venezuela in 1907 rich fields were found near the shores of Lake Maracaibo. The problem of getting the oil into the world market proved to be a difficult one. Lake Maracaibo is connected with the Caribbean thru a narrow strait 20 miles long. Near the point where this strait leaves the lake, a large silt bar persists in forming and succeeds in partially closing the outlet. As a result of this large ocean going tankers cannot enter the lake to secure oil. Only boats of less than 11 feet draft of water may go inside. No one of the oil companies wished to assume the expense of the dredging which would be necessary to admit large boats into the lake, nor would they act together. It was but natural that near by Curaçao, offering the advantages of an excellent harbor and the protection of a stable government under the Dutch flag, should serve as the point for storage, refining and trans-shipment of petroleum and its products. In 1917 a great refinery was begun and located upon the Schottegat or inner harbor of Santa Anna at Willemstad. This is said to be the largest oil refinery in the world. It is operated by "The Curaçaosche Petroleum Industry," a subsidiary of the Royal Dutch Company. Seventy per cent of the total output of the refinery consists of fuel oil, the other products are gasoline, kerosene, lubricating oil, and asphalt.

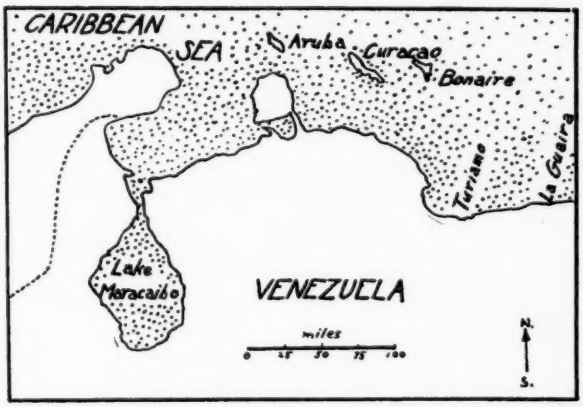

FIG. 1. Sketch map showing relation of Curaçao to Lake Maracaibo

A fleet of 35 small tankers with an average capacity of 2300 tons and capable of maneuvering the shallow waters of Lake Mara-

caibo is operated by an affiliated company and maintains a constant parade from the oil fields of Venezuela to the refinery at Curaçao. The oil is supplied under contract from the wells of the Caribbean Petroleum Company, the British Controlled Oilfields, Ltd. and the Venezuelan Oil concessions all located in or near Lake Maracaibo. Not long after this fleet of small tankers began these frequent trips, Curaçao became a port of call for oil burning liners as well as for large tankers to secure the products of this great refinery. Accordingly Willemstad has taken a prominent place among the great ports of the world with a total of 10,753,000 tons in 1930.

FOREIGN TRADE

As a result of this boom, the foreign trade of this little group of Dutch islands has increased tremendously. In 1910 the total exports of the United States to Curaçao were valued at $726,766 and in 1930 they had increased in value to $24,026,000. Similarly the imports of the United States from Curaçao during the same period had increased in value from $303,684 in 1910 to $78,345,000 in 1930. Its per capita import in 1930 of $109.10 exceeded all other Latin American countries. Thru these twenty years Curaçao has been purchasing from the United States large quantities of iron and steel manufactures such as tubular products, steam engines, electrical pumping and oil apparatus, automobiles and trucks, southern pine boards, leather manufactures, corn meal, wheat flour, cotton goods and cotton shirts. Most of the exports of Curaçao are petroleum and petroleum products, the bulk of which goes to Latin American and European markets, an estimated 7 per cent is sent to the United States.

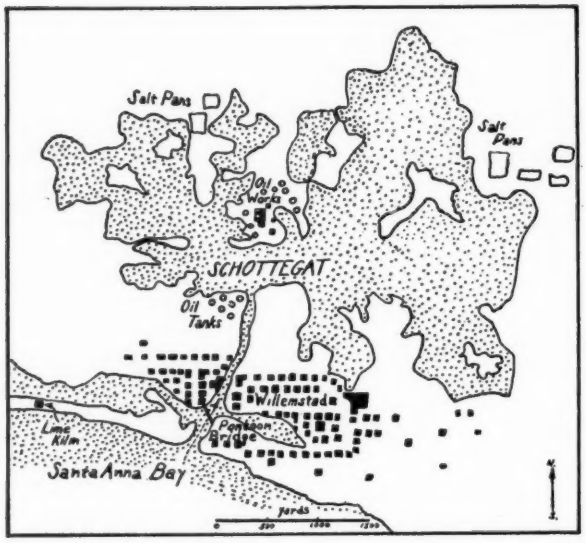

FIG. 2. Sketch map of the harbor at Willemstad, showing location of refineries

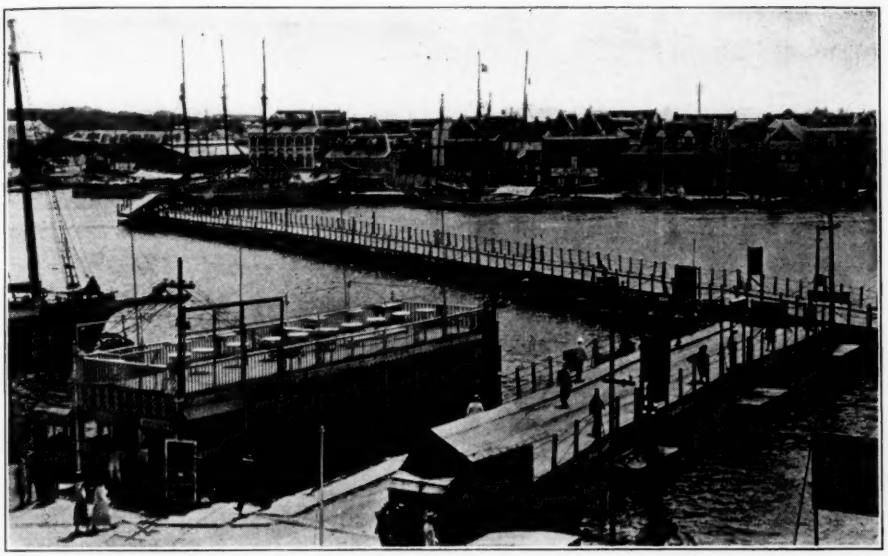

FIG. 3. The pontoon bridge at Curaçao

WILLEMSTAD

Willemstad, the capital, located upon the harbor, is a spic and span bit of old Amsterdam set down in a tropical setting. The houses, in the style of the seventeenth century with prominently peaked, tiled roofs and Dutch gables, are picturesquely painted in rainbow colors. One of the conspicuous features of Willemstad is the canal-like entrance to the harbor spanned by a pontoon bridge operated by steam launches. To cross it costs two cents for pedestrians wearing shoes, one cent for people wearing sandals, and free if bare footed. Whether the pedestrian wears shoes or not is considered an indication of his ability to pay the toll.

PEOPLE AND LANGUAGE

There is a strange mixture of language and people here. The mass of the population is the very black Negro who speaks a lan-

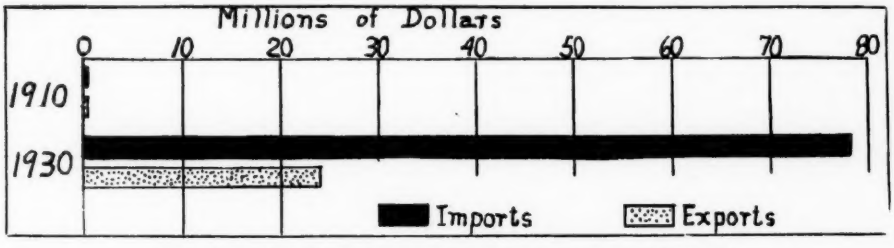

FIG. 4. United States imports from and exports to Curaçao

guage known as Papaimentoe. This is a curious collection of Dutch, African, Indian, Spanish, English, and Portuguese words which is said to have little or no grammar. A weekly paper published in this dialect will test the skill of the most expert linguist. These Negroes have proved to be very efficient laborers in the refinery. As a result of the steady employment offered, they have been able to purchase American shoes, automobiles, and cigarettes. Most of the shops are kept by Japanese, Chinese, Dutch, and Hindus all speaking enough English for business purposes.

CLIMATE

Curaçao is indeed a desert isle. The Northeast Trades which blow over this low lying island bring a very scant rainfall mostly

FIG. 6. A street scene in Willemstad

FIG. 5. The city of Willemstad, Oil tanks may be seen in the distance

FIG. 7. A native house in Curaçao. Note the cactus vegetation

in the months from June to October. This light rainfall produces a parched landscape which is dominated chiefly by a cactus vegetation. The cactus finds profitable use as fences and even is used for drying the family wash. Being a coral island there is no other natural source of water except the rainfall which is too meager for the needs of the town of Willemstad. A considerable quantity of fresh water is provided by distillation of sea water to supplement the rainfall.

AGRICULTURE AND THE FOOD SUPPLY

Small crops of corn, beans, and sugar are raised but not in sufficient quantities to supply the food needs. This necessitates the im-

port of several items of food stuffs in considerable quantities such as vegetables, corn meal, wheat flour, biscuits and crackers, and refined sugar. The principal fruit raised is the orange which is used as flavoring for a liquid named for the island. Contrary to general belief, this far famed Curaçao cordial is not made on the island. The dry skin of the orange is shipped to Holland where it is used for flavoring the drink.

Some cattle are raised but the meat supply is quite inadequate. The meat needs are largely met by a considerable import of fresh, pickled, and smoked meats, lard, as well as large quantities of evaporated milk.

OTHER INDUSTRIES

Aside from refining oil little else is produced in Curaçao. Some salt is secured by evaporating the ocean water, small quantities of phosphate are mined and a little lime is burned for local needs. One ostrich farm is operated and serves as a point of interest for the visitor.

TOURISTS IN CURAÇAO

Due to the popularity of winter cruises during the past few years, many Americans have visited Curaçao. The steamship companies have chosen Willemstad as a port of call for two reasons chiefly; first, being under the Dutch flag it offers variety in the cruise itinerary, second, it serves as a convenient port in this vicinity in which oil burning ships may secure fuel. Since Willemstad is a free port nearly every thing is cheap and this delights the shopping tourist ashore for a few hours while the ship is taking on fuel. Many of the very narrow streets of the business district in Willemstad are lined with shops worthy of Fifth Avenue or the streets of London and Paris in which may be purchased articles as varied as French perfumes, Chinese embroideries, and East India brasses. One may have the unique experience of being an American tourist traveling on a Swedish oil burning ship, purchasing Egyptian panels from a Japanese shop keeper who speaks English in a Dutch island.

A TEACHER SELF-ANALYSIS SHEET IN ELEMENTARY GEOGRAPHY

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In these days of depression and elimination of "fads" fewer teachers than formerly have the services of a competent supervisor. Some good substitute needs to be provided, therefore. The present report is to illustrate and to enumerate the merits of a good substitute, namely, the teacher self-analysis sheet in elementary geography.

This silent supervisor consists of a series of questions, each of which can be answered with "yes" or "no" and ideally should be answered "yes," that cover rather completely the full array of the technique of teaching geography. Altho the distinction between general method and special method is not entirely clear, the questions in the accompanying self-analysis sheet are selected primarily from the point of view of a teacher of elementary geography. The wording of each question is such that its item of technique is clearly presented and the responsibility for the embodiment of such technique is brought definitely to the attention of the teacher. The questions do not go into tedious detail, and they do not consist of mere generalities. They represent authoritative opinion on the best theory and practice of teaching, having been selected after an examination of practically all that has been written on the subject of geography teaching. The self-analysis sheet summarizes in a few pages most of the best that has been written on how to teach geography, and it gives references with each question to some of the best literature on the topic.* It is a succinct composite of the best thought on how to teach geography.

Obviously, the principal value of the self-analysis sheet is to make the teacher more circumspect in criticizing her own teaching. The teacher should study each item in the list carefully from time to time. The studious reading of each item at suitable intervals should of itself stimulate a conscientious teacher to improve along the lines suggested. Also, a supervisor can use the analysis sheet for similar purposes. A perusal of the several questions by a supervisor occasionally should tend to make the supervisor more im-

* Limited space has made it impossible to include the extensive reference list prepared by the author. Editor.

personal and circumspect in observing the work of geography teachers.

Not the least of the values of such a self-analysis sheet as the accompanying one is the value of making the analysis sheet. To make one, a teacher or committee of teachers must go to the bottom in the study of teaching technique. If after the finished product is prepared it should be destroyed, the work of preparing it would not be in vain. In fact, it is almost necessary for a teacher to have helped prepare such a silent supervisor before she can appreciate one that she may find in printed sources.

The self-analysis sheet presented herewith was prepared as a term project by a class in the teaching of geography under the instruction of the writer at Indiana State Teachers College. With it as a sample, a teacher in service should work individually or with a group to prepare similar analysis sheets in other subjects. Also, general technique analysis sheets in instruction, classroom management, and personality traits are needed. These are very helpful whether a teacher enjoys the service of a good supervisor or not, but especially if not.

FACTS CONCERNING THE SELF-ANALYSIS SHEET

1. The self-analysis sheet, as its name implies, is primarily for the purpose of making the teacher more circumspect in criticizing her own teaching from time to time. However, a supervisor will find it helpful also.

2. An effort has been made to distinguish between general method and special method and to include only items of special method, in so far as such is possible.

3. An effort has been made to stay midway between the extremes of too minute detail on the one side and vague generalities on the other.

I. MODERN CONCEPTION

1. Does the teacher hold the modern point of view that geography is not merely a description of the earth's surface but is an ever-changing study of the relationships between man and his natural environment, and that the humanized subject is fundamental for an appreciation of many social and economic problems?
2. Does the teacher stress an understanding of human interdependence and responsibility to the social group?
3. Does the teacher study geography from life in the home and community more than from textbooks?
4. Does the teacher present such geographic problems as those which will stimulate pupils' thinking rather than fact learning?
5. Does the teacher stress the fact that geography is an ever-changing subject, and that the earth is not completed but still in the making?
6. Does the teacher emphasize aspects of beauty as well as of utility?

II. MOTIVATION

1. Does the teacher use industries of a city to arouse interest and then introduce the interdependence of groups and commercial relations between each in different cities, regions, and nations?

2. Does the teacher show relation between pupils and peoples of other regions as an incentive to study?
3. Does the teacher make direct associations between such things as clothing, houses, food, exports, imports, and show the pupils a need for such information?
4. Does the teacher bring the child's own experiences and activities into play as a background for teaching new things?
5. Does the teacher go into details of things about the children pertaining to nature as an incentive to study, such as detailed discussion on field trips?
6. Does the teacher, in motivating the work, make use of: maps, stories and poetry, slides, pictures, old relics, books, vivid imagery, diagrams, and field trips and adventure?
7. Does the teacher stimulate interest by presenting problem situations which will stimulate thinking by the pupils?
8. Does the teacher realize this subject has had a hard fight and therefore try to show pupils and parents why it should be studied?
9. In the second cycle of the study of geography, does the teacher stimulate interest by enriching former content and making it practical by application to social situations?
10. Does the teacher have the pupils trace the derivation of geographical names so as to make this study interesting?
11. Does the teacher employ the use of the fear of certain natural forces as a motive of study of the different phenomena in geography?
12. Does the teacher ask pupils to name sections of a country they would like to see?
13. Does the teacher take advantage of world news in magazines and newspapers to increase the pupils' interests?
14. Does the teacher arouse sympathy for a country by noting some testing experience they are now undergoing that our country has undergone?

III. Organization of Subject Matter

1. Does the teacher aid the memory and clarify the study of geography by a central theme?
2. Does the teacher place emphasis on various geographical facts in proportion to their importance in human affairs?
3. Does the teacher present geography according to natural units and large geographic regional units instead of political divisions?
4. Does the teacher organize the knowledge of a region with physical aspects first and human aspects last, thus forming a body of related facts?
5. Does the teacher in passing to a new region lead the pupils to carry forward from regions already studied such relationships as find significant application in the new area?
6. Does the teacher present orally the most difficult lessons before they are assigned in the text so that the data and principles of previous lessons needed for appreciating the new may be recalled?
7. Does the teacher interweave place geography into the general study of the subject and in accordance to their appearance or use in everyday life?
8. Has the teacher constructed a thoro foundation of home geography, or observational geography, on which to build her pupils' study of more remote regions?
9. Does the teacher adapt her work to the changing of seasons, such as teaching soil and soil formation in the spring when the work may be motivated from the local gardening interest?
10. Does the teacher build the content of second-cycle geography on the basis of that in the first cycle?

11. Does the teacher use the state supplement in connection with the larger unit of which the state forms a part?
12. Does the teacher maintain a fair balance of attention to geography of America and to that of foreign countries?

IV. Correlation with Other Subjects

1. Does teacher correlate her teaching of geography with that of other school subjects in general?
2. Does the teacher correlate her teaching of geography with that of history?
3. Does the teacher correlate her teaching of geography with that of current events?
4. Does the teacher correlate her teaching of geography with that of nature study?
5. Does the teacher correlate her teaching of geography with that of English?
6. Does the teacher correlate her teaching of geography with that of reading?
7. Does the teacher correlate her teaching of geography with that of music?

V. Field Trips

1. Does the teacher take the pupils on field trips to show the relation of geography to business, industrial life, physical features, and local climate, so as to give the pupils a more real view of geography?
2. Does the teacher have a definite aim for each field trip so as to focus attention and give a definite pupose?
3. Does the teacher acquaint herself with physical forms and processes of her community and visit the various industrial establishments in order to plan her field trips more intelligently?
4. Does the teacher take into account the age and ability of his class in deciding what to show pupils on field trips?
5. In planning visits to industrial plants, does the teacher concentrate on geographic and social implications rather than commercial processes?
6. Does the teacher give an introductory lesson to her pupils before making a field trip with them?
7. Does the teacher or a guide give explanations and ask questions of the pupils while conducting field trips?
8. Does the teacher try to bring back from field trips illustrative materials for further use?
9. Does the teacher supplement field trips with interesting follow-up work that helps utilize the latent possibilities of the trips?

VI. Local Geography

1. Does the teacher in teaching local geography encourage the pupils to investigate such items as the different industries of their community?
2. Does the teacher translate the familiar local experiences and phenomena into more general physical, economic, and social geographical principles, and thus progress from the known to the unknown?
3. Does the teacher make her own home geography text by collecting maps, pictures, and descriptive material best suited for her use?
4. Does the teacher teach the pupils directions and distances from local geography?
5. Is the geographic study of social customs, types of home life and population problems of different nations and civilizations used as basic information for some of the profound problems confronting the particular local district?

VII. Journey Geography

1. Does the teacher give the pupils geographic experience by helping them plan imaginary trips?

2. Does the teacher provide intelligent guidance in making travel attractive to the pupils?
3. Does the teacher tell the pupils her travel experiences and encourage the pupils to tell their experiences?
4. Does the teacher invite residents of the community to relate to the class their experiences in travel?
5. Does the teacher recommend to children the travel lectures given to the general public?
6. Do the pupils make scrapbooks as souvenirs of their imaginary journeys?

VIII. VISUAL AIDS

1. Does the teacher use the pictures in the text, and other well-chosen and representative half-tones and photographic prints to help pupils obtain clear and correct imagery?
2. Does the teacher collect a large number of illustrative pictures, mount them, and keep them systematically cataloged?
3. Does the teacher encourage the pupils to collect illustrative pictures?
4. Does the teacher use pictures as the basis for testing concepts gained in the study of geography?
5. Does the teacher make out one or more pertinent questions on each geography picture?
6. Does the teacher use pictures as a means of testing?
7. Does the teacher use pictures to answer definite questions?
8. Does the teacher use few pictures each class period, as a rule?
9. Does the teacher know the vast amount of pictures available, how to preserve and select them, and does she use her knowledge?
10. Does the teacher use slides to make material more vivid, to stimulate interest, to study countries, industries, etc.?
11. Is the teacher resourceful in making her own lantern slides and obtaining slides from state bureaus?
12. Does the teacher have her projection lantern set up and in focus before class starts?
13. Does the teacher permit a pupil to operate the projection lantern?
14. Does the teacher limit the use of slides to six or eight each period, as a rule?
15. Does the teacher have pupils use stereographs independently and then follow up the same by class work using lantern slides?
16. Does the teacher use only those motion pictures which she has previously seen, which relate to current class work, and which show regions or subjects that cannot be seen by the children in any other way?

IX. GLOBES

1. Does the teacher use the globe before the map to avoid misconceptions?
2. Does the teacher use globes as the best representation of the earth in teaching locational geography?
3. Does the teacher use the globe in demonstrating rotation, revolution, longitude and time, and other aspects of mathematical geography?
4. Does the teacher use a globe to teach great-circle routes and other concepts of distance?
5. Does the teacher use a globe in teaching relations of size, etc.?
6. Does the teacher make use of a physical globe?
7. Does the teacher use a "Form-a-globe" in teaching map projection?

X. MAPS

1. Does the teacher employ a wide variety of types of maps, as rainfall maps, political maps, physical maps, historical maps, etc?
2. Does the teacher use both physical and relief maps in teaching place geography?
3. Does the teacher introduce map study and terminology only as rapibly as pupils are able to comprehend it?
4. Does the teacher teach pupils to see thru maps the things they represent, to look thru maps, not at them?
5. Does the teacher produce vivid imagery thru the use of illustrated or picture maps?
6. Does the teacher explain and make sure the pupil can explain the keys and symbols of the map?
7. Does the teacher make use of practical illustrations in the use of scales of the maps?
8. Does the teacher have the pupils see directions on maps by parallels and meridians rather than by north up, and south down?
9. Does the teacher aid in interpreting distances and locating places on the map?
10. Does the teacher make all possible use of wall maps?
11. Does the teacher give the pupils something definite to look for in map study?
12. Does the teacher insist on use of pointer in using wall maps?
13. Does the teacher make use of blackboard maps and slide maps to make the lessons clearer?
14. Does the teacher use the map to raise and answer questions?
15. Does the teacher use map work as an integral part of the lesson, and relate it to the text?
16. Are pupils required to make maps as a means for expression, and as a means for understanding and interpreting other maps?
17. Does the teacher have the pupils draw maps using local geography, and this before that of the state or nation?
18. Does the teacher have pupils draw simple maps, and thereby avoid uninteresting details?
19. Is map making regarded more as a geographic aid than as an excuse for artistic display?
20. Does the teacher have pupils write in neat script on the map rather than in poor print?
21. Does the teacher make good explanations of maps to avoid erroneous ideas?
22. Does the teacher make use of outline and stencil maps?
23. Does the teacher keep a map of the town or community in the schoolroom?
24. Does the teacher compare the shapes of countries, lakes, etc. to various figures of similar shapes?
25. Do the pupils feel free to use wall maps during study periods?

XI. PROBLEM TEACHING

1. Does the teacher attempt to discover and present problematic situations as a part of her work?
2. Do the pupils use suitable materials such as maps, diagrams, statistical tables, grafs, and language symbols for problem solving?
3. Has the teacher taught the procedure of study, namely observation, analysis, hypothesis, deduction, and verification?
4. Does the teacher attempt to supply her pupils with sufficient background of experience as a basis for their reasoning in geography?

5. Does the teacher have the pupils read a section of their lesson quickly, helping them to arrange and classify the facts in the proper order, and then to deduce and verify general principles?
6. After geographic principles have been arrived at by induction, does the teacher provide a number of situations in which the pupil can apply the principles?
7. Does the teacher show her pupils how to use questions, maps, pictures, reference tables, and geographical indexes as sources of information on problems?
8. Does the teacher encourage the pupils to observe natural phenomena, such as winds, sun, eclipses, clouds, etc., for data in problem solving?
9. Does the teacher utilize the opportunities for debate in geography?

XII. LABORATORY WORK

1. Does the teacher introduce simple laboratory studies peculiar to geography?
2. Does the teacher in teaching about soils have the children bring some and personally experiment with it?
3. Does the teacher in teaching evaporation use simple experiments such as tracing a word on the blackboard with a wet cloth and watching it disappear?
4. Does the teacher in teaching air movement use simple illustrations and experiments which the children can understand?
5. Does the teacher lead the pupils to a knowledge of the effects of climate by observation of the everyday happenings around them?
6. Does the teacher have the proper laboratory equipment with which to teach the children geography in the best way?

XIII. SUPPLEMENTARY MATERIAL

1. Do the teacher and pupils have at hand and use a wide variety of supplementary materials, such as geographical readers, books of travel, encyclopedia, government reports, magazines, and newspapers?
2. Does the teacher employ current weather reports in studying weather?
3. Does the teacher apply current events in explaining geographic principles and apply geographic principles in interpreting current events?
4. Does the teacher know where and how to obtain supplementary material?
5. Does the teacher interest the pupils in collecting clippings, pictures, specimens, and numerous kinds of maps and models that bear upon the work in hand, furnishing information and making the schoolroom a place of interest?
6. Does the teacher make use of the free literature provided by advertisers?
7. Does the teacher make use of the state libraries to overcome her difficulties of poor supplementary materials?

XIV. OTHER DEVICES

1. Does the teacher employ the project method, building the projects around geographical cores?
2. Does the teacher use dramatization in teaching geography?
3. In the use of dramatization does the teacher stress geographic concepts, reasoning, and appreciation rather than perfection of performance or completeness of costume?
4. Does the teacher use moulding clay or a sand table to illustrate physical features, physical processes, or other exhibits?
5. Does the teacher in summarizing a unit of a country have the pupils plan an exhibit of things closely connected to that country?
6. Does the teacher encourage the accumulation of geographical materials for an educational museum which will help children acquire a first-hand knowledge of objects beyond their range of observation?

7. Does the teacher make use of exhibits offered by manufacturing firms and universities?
8. Does the teacher have the pupils observe the sun, moon, stars, clouds, and winds in order to help understand change of seasons, direction, weather, etc.?
9. Does the teacher explain distance in terms of modes of travel or distances in walking?
10. Does the teacher tell stories about people living elsewhere?
11. Does the teacher of geography have a bulletin board upon which she displays the things of general interest?
12. Does the teacher use games, such as dissected maps, for seat work and lessons in geography?
13. Does the teacher make use of the services of the weather bureau in studying the weather conditions?
14. Does the teacher make use of the radio when possible to help motivate and explain such geographical phenomena as longitude and time and weather?
15. Does the teacher refer to transcontinental airplane flights as a device to help motivate and explain longitude and time and anti-trade winds?
16. Does the teacher use records of foreign music in aiding the study of foreign people?
17. Does the teacher use the fruit stand as an opportunity to teach the foreign fruit sources and as an approach to foreign geography?
18. Does the teacher use blackboard drawings to show natural earth features?
19. Does the teacher correlate her geography class work with geographic correspondence so that pupils will get first-hand information about place, home, physical and natural geography?
20. Does the teacher refer to recent polar explorations as a device in motivating and understanding mathematical geography and climate?
21. Do the teacher and pupils use grafic devices to illustrate geographic facts?

XV. MEASURING RESULTS

1. Does the teacher know that teacher-made tests are better for measuring results in geography until better standardized tests are established?
2. Do the tests measure a pupil's knowledge of facts, interpretation of facts, and ability to use facts?
3. Does the teacher use current statistics for fresh test material?

XVI. RESULTS

1. Do the children understand geographic principles and phenomena?
2. Do the pupils know how and where to find materials and information on geographical subject matter?
3. Do the children understand commercial and industrial activities more clearly after having had geography?
4. Do the children appreciate the influence of physical environment upon man?
5. Have the pupils acquired a feeling of human sympathy and brotherly love despite differences of race, location, or social attachment?
6. Has the study of geography promoted international tolerance and understanding?
7. Do the pupils recognize foreign peoples and customs as being different instead of queer, and that all people are more alike than they are different?
8. Has the study of geography promoted good citizenship and ethical character?
9. Has the study of geography developed in each child the ability to think logically and to solve problems?
10. Has the teacher developed a habit within the pupils of keeping up with the times and of reading from authorities?

11. Has the study of geography developed a higher degree of broad-mindedness?
12. Do the pupils find the study of geography to be a satisfying hobby for leisure time?
13. Are the children trained to appreciate and understand the beauty and phenomena of nature?
14. Does the study of geography inspire travel and the observational opportunities of it?
15. Do the pupils appreciate the need for conserving the soil, forests, and other natural resources?
16. Has the study of geography promoted thrift?
17. Do the pupils put into their regional setting many current events that they read about?
18. Has geography aided the pupils in making vocational choices?
19. Has the study of geography engendered patriotism?

GEOGRAPHY LESSONS IN SNOW

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The geography teacher who recognizes that nearly all things about him illustrate various phases of his subject may avail himself of exceedingly valuable teaching material in a snowfall or a season's snow cover. Nature sets up all the apparatus and performs the demonstrations in her own laboratory; the instructor need only guide the pupils' observations so they will see the processes and understand the causal factors and their results.

The child's fondness of snow excludes the need of interest stimulating devices. Papers dealing with snow and snow responses supplemented by newspaper clippings may be assigned to provide great latitude in choice of subject and method of development, thus permitting adjustment to grade level and individual differences.

The author wishes to suggest the following lines of study in connection with snow:

1. Record of snows of season, with a description of each storm —cause, origin, velocity, amount and duration of fall, etc.

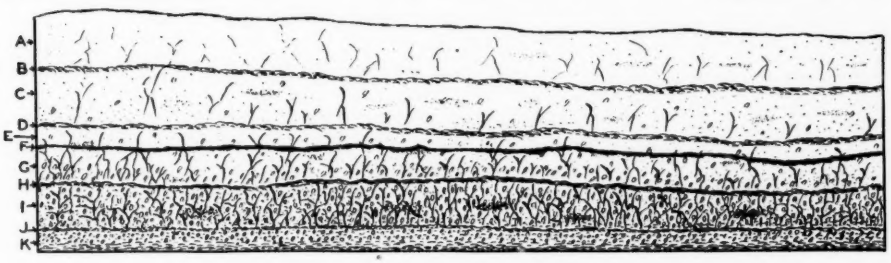
2. Social and economic responses to snow with news clippings and pictures to illustrate.

3. Class excursions for physiographic studies with written reports including illustrative sketches and diagrams.

Any one of these may be assigned as a term paper in classes of high school grade.

1. A snow record, kept by a class or by individual pupils serves as a splendid approach to the study of weather and climate. By observing and recording snows and the phenomena that bring them, pupils may advance far in their understanding of climate and meteorology besides acquiring the habit of watching the "elements" —weather-mindedness.

The teacher who has access to official weather maps and forecasts may employ them to great advantage in advanced classes. The project suggested above should be planned to give a passing ac-



AN IDEALIZED CROSS-SECTION OF SNOW COVER

Layers

A—C—E	Light snow layers, variously mixed with dust and dirt. (Young sedimentaries?)
B—D—H	Icy crusts suggestive of interruptions of deposition by uplift and denudation. (Erosion surfaces?)
F	Ice or sleet, a resistant layer. (Extrusive rock?)
G—I	Old heavy snow with névé-like granules. Underlying strata with greater density and complexity of structure due to compression. (Metamorphosed?)
K	Ice mixed with dirt and pebbles; the ground layer. (Igneous complex?)

quaintance with cloud forms, storms, and storm tracks as well as such phenomena as temperature, pressure, and humidity and the various instruments that record them. Regular observations and instrument readings, where equipment is adequate, may further enlarge the study and enhance its value.

2. Newspapers offer a wealth of geographic material relative to economic and social responses to snows and storms. The author has before him one clipping titled "London's Fog Bill, $5,000,000 a Day" and another headed "Snowstorm Cost the City $10,000," both taken from a Worcester, Massachusetts, paper. From these two items alone a geography teacher might develop several lessons of true geographic value. For example, if Worcester spent $10,000 to clear eleven inches of snow, how much would the city expend in the event of a twenty inch fall? How much would similar storms cost New York City? Does London's fog cost more than New York's snow? Lessons dealing with the effect of a snowstorm

upon transportation, unemployment, social welfare, sports, health, etc., have equal possibilities. The teacher who wishes may expand the study by comparisons of winter activities in snow regions with those in regions that never have snow.

3. The teaching values of snows and snow cover present nearly unlimited possibilities in the field of elementary physiography. Class excursions to study physiographic processes and features illustrated in snow yield numerous concomitant results. They provide "field" training that develops the student's powers of observation and increases his ability to interpret natural phenomena. They create the proper attitude toward geography as a living science, not a science of pages and paragraphs; and they awaken an appreciation of the geographer's laboratory, the great out-of-doors. The value of the study depends largely upon the teacher's ability to draw analogies clearly. A snowfall represents sedimentation. The wind erodes, transports, and deposits the snow as loess plains and sand dunes. A drifted hedge-row becomes in imagination a row of tamarisks about an Arabian oasis protecting it against the advancing sands.

A period of "thaw" initiates, perhaps completes, an erosion cycle during which various phases and stages of stream erosion with their peculiar processes and resultant features may be observed in miniature—stream meanders, alluvial cones and fans, deltas, outwash plains, river terraces, etc.

A "freeze" (diastrophism) may compress (metamorphose) the sediments and produce fractures (faults) and other structural features.

Should another snow (a second sedimentation) come to overlie the first, a well chosen cross-section of the snow cover may illustrate such features as unconformity, faultline scarp, etc.

Successive snows and thaws complicate the study and increase its value, particularly if remnants of each fall persist. In regions where winter snows accumulate to considerable depth, a whole series of changes and events (physiographic history) may be read in a cross-section of the snow cover in late winter.

THE TEACHER-TRAINING PROBLEM IN GEOGRAHPY

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The need for the training of students for the teaching of geography coincides with the general need for participation by college students in Laboratory Schools. Participation in classroom procedure, either as an observer or as a part time teacher, tends to acquaint the prospective teacher with the problems to be met once he is in the field. The purpose of work in the Laboratory Schools was made fairly clear by John Dewey when he said, "The purpose of practice teaching is not to lead the student to immediate proficiency but to make of him an alert student of education." The observance of actual classroom work provides concrete illustrations of methods and principles of teaching that have been considered or are to be considered in theory instruction. Discussion after such observation gives the student an opportunity to interpret the teacher's technique. The student, interested in getting himself ready to teach, should be in search of effective methods which he may later use.

INITIAL OBSERVATION OF CLASSROOM PROCEDURE

The observation of classroom teaching makes its maximum contribution to the beginning teacher when the significant points in the lesson are jotted down during the observation period. The written summary, prepared later, helps to make the student more conscious of what he had seen. A sympathetic, analytical study is desired rather than a series of statements concerned with the procedure. In checking these papers the instructor should note the concrete illustrations observed as well as the general principles considered in the analysis of the lesson. After a short time the student should show some ability at viewing the entire situation. However, since it is impossible to observe all things in a single period, it is well to center the attention on specific problems. At the outset the student teacher should show some interest in becoming acquainted with the members of his class. Running consecutively with this interest is the observation of the effectiveness of the physical surroundings rather than with a detailed consideration of the varied activities entering into the furthering of geographic knowledge. At this time the student observes the general tone of the classroom. He asks

himself: Were the pupils happy in their work? Did the teacher know his class? Did the pupils give attention or did they work half-heartedly? What about the percentage of attention? How might the inactive pupils be reached? Were difficulties discovered and attempts made to eliminate them? Were methods effectively used? Were the necessary materials provided? What system was used in distributing and collecting them? What were the specific needs of the class? As the pupils moved about the room did they consider the rights of others? What might I do to further my understanding of them? Students learn to know members of the class thru the checking of tests and thru such other activities as may be designated by the supervising teacher.

CONDUCT OF ACTIVITIES

In order to secure the most from work in the Laboratory School, observation for a period of weeks is accompanied by the conduct of individual and group activities before the student is given over the responsibility of the entire class. Once the student has gradually shouldered responsibility; when he has prepared a unit of work showing that he knows how to begin and where to go; he is ready to attempt his actual teaching. Let us say that a student has prepared a unit of work on the Congo that includes well written directions for presenting the motivation, assimilation, summary and testing exercises. After the supervising teacher has reviewed the unit carefully with the student, he should be ready to attempt to hold the attention of the group. At this juncture when the student is ready for active participation he is given the opportunity to present the work to the best of his ability. After a period of practice work on the Congo Unit, the following questions might well be asked of the student: Do you have any criticism to offer on your teaching? Why was the time distributed as it was? Have you given a clear concept of a tropical forest? A real understanding of reasons why the Congo natives live as they do? Have you clinched reasons for travel in a dugout? Before outlining the procedure for the following day the supervisor might be encouraged to say, "Your work today was an improvement over that of previous days from the standpoint of comprehensibility. However, during the last half of the period the technique used in summarizing was somewhat vague. Relationships might well have been listed." After similar comments of this nature are included in a conference the alert student begins to realize the value of teaching under supervision.

LATER OBSERVATION OF TEACHING TECHNIQUES

Actual teaching is in turn followed by observation. By this time the student has a better notion of exactly what is in the supervisor's mind; he knows the major principles upon which the interpretation of the work is based; he is better able to place the emphasis upon the immediate ends leading to the ultimate or to differentiate between immediate and concomitant objectives; and since he is better acquainted with the class he is more capable of analyzing the many problems that arise. The student is also beginning to distinguish between general and special methods. He asks himself questions of the following nature: Might not the goal have been more carefully set? Just why were the pictures presented in the way in which they were? What has this method contributed to my knowledge of effective methods of teaching? At this time his ability to make a careful study of the work of the class is aided by the suggestions listed for observing types of activities that arise in geography classes.

1. The development of a presentation lesson or of an introductory overview of a geographical unit.
   a. Utilizing motivation exercises that aid in securing a proper mind set.
   b. Pointing out the outstanding types of human adjustments to the natural environment of a region.
   c. Indicating the major relationships between a given type or types of human activities and the environmental complex.
2. The conduct of activities peculiar to several motivation or goal setting exercises, where the pupils are being lead to set up new problems.
   a. Presenting cultural items characteristic of a region thru the use of pictures, maps, or grafs.
   b. Creating an atmosphere thru the use of guiding questions that lead the class into discussion.
   c. Calling attention to disconcerting data—information that conflicts with material learned about countries previously studied.
3. The conduct of a problem solving exercise wherein pupils are assembling material from many sources to be used in the solution and presentation of their problems.
   a. Selecting worthwhile geographic material.
   b. Encouraging the habit of clear logical thinking in the intelligent organization of the material.
   c. Presenting of findings effectively.
4. The provision for individual differences and rates of progress made in study, thru the presentation of activities varied enough in scope to appeal to widely different individual interests.
   a. Supplying supplementary books for rapid readers.
   b. Presenting exercises calling for the interpretation of maps, pictures and grafs.
   c. Applying geographic understandings in the interpretation of current events or new problems.
   d. Evaluating material previously collected.

e. Representing in grafic form geographic facts expressed in a different medium.
f. Making games, puzzles and tests having geographic quality.

5. The use of pictures as a basic source of information.
   a. Doing field work with pictures, involving the reading from them about the cultural items shown or suggested and accounting for them by the natural.
   b. Raising questions of geographic import about landscapes; reading from them readily discernible relationships; reading into them the natural conditions suggested and making tentative conclusions concerning the relationships.
6. The use of maps as an important source of material which is made to function in gaining geographic information.
   a. Evaluating maps to be used in geographical study in the light of the specific contributions which they make to an understanding of man's relation to his environment.
   b. Providing guidance to insure on the part of the pupils adequate training in increasing their ability to read maps.
   c. Using information gained from maps in acquiring the major understandings.
7. The use of such motor activities as are involved in the making of a map having geographic quality.
   a. Compiling data accurately that is used in showing distributions.
   b. Developing symbols to be used on maps and diagrams.
8. The development of activities involved in the interpretation of grafs.
   a. Capitalizing reading from block and curve grafs the outstanding items shown.
   b. Accounting for the rank of the statistical items pictured.
9. The study of expression activities involved in the making of grafs.
   a. Stimulating self activity in figuring out units of distribution.
   b. Noting interest and reaction on part of pupils to graf work.
10. The application of information gained thru the assimilation exercises.
    a. Explaining the interdependence of people by applying what has been learned to remote areas.
    b. Improving the mechanics of problem solving.
11. The consideration of individual differences in the ability of pupils to summarize work.
    a. Encouraging oral expression, in so far as possible thru experiences and not thru formal memorization.
    b. Acquiring certain motor skills without a waste of time, outlining major ideas gained in the course of the unit.
    c. Expressing relationships in concrete form thru the making of accurate statements.
    d. Training in the effective phrasing of qualifying statements, avoiding generalization and sweeping inaccurate statements.
    e. Clinching the core of thought with illustrative relationship statements.
12. The utilization of testing exercise where pupils are responding to various kinds of stimuli.
    a. Reacting to oral statements and questions.
    b. Attacking questions requiring both objective and subjective response.
    c. Arousing a questioning attitude in pupils thru presentation of tests.

DESIRED OUTCOMES

After the college student has both observed carefully and taught to the best of his ability, he sees that one unit is built upon another and that its selection for appropriate grade levels is a real problem for the geographer. Since first class organization is one of the sign

posts of good teaching, once the unit is selected its organization should contribute to the geographic personality of the country. It is well to help the college student with the organization of the content of at least one unit. The supervising teacher might well point out the relationships to be included, in the beginning, in order that the student understand the technique. Since the beginning teacher has but relatively little ability to plan and to organize geographical units, he needs to consider with the supervising teacher the objectives of a specific unit of work and to analyze the type of material in it before eventually attempting to prepare and present an entire study.

Since a student is interested in getting himself ready to teach he should ask himself: "Where do I want to go? What should I begin with in order to get there? Just what material should I include?" He must consider the specific needs of the pupils, the material available and the geographic attainments desired as set up in a general hypothesis.

Each lesson should be planned to illustrate the specific points in the technique of teaching. It should give a general idea of the spirit and nature of geography. By this time the student has gained some ability to think geographically thru analyzing the content of books of travel and of current articles. Above all he has furthered his ability thru the recognition of cultural and natural items in a comparative study of geography texts. Reflective thinking concerning the difficulty of the relationship statements involved and their adaptability to different grade levels have also been considered. An understanding of the nature of geographic relationships and a recognition of the need for qualifying statements is recognized. Once these points are established there is a basis for the progress of geography teachers. Correlated with a sympathetic understanding of children they tend to reach toward the goal set for students in training for the teaching of geography.

WHEN 1934 BEGAN

E. H. WEBSTER
Atlanta University

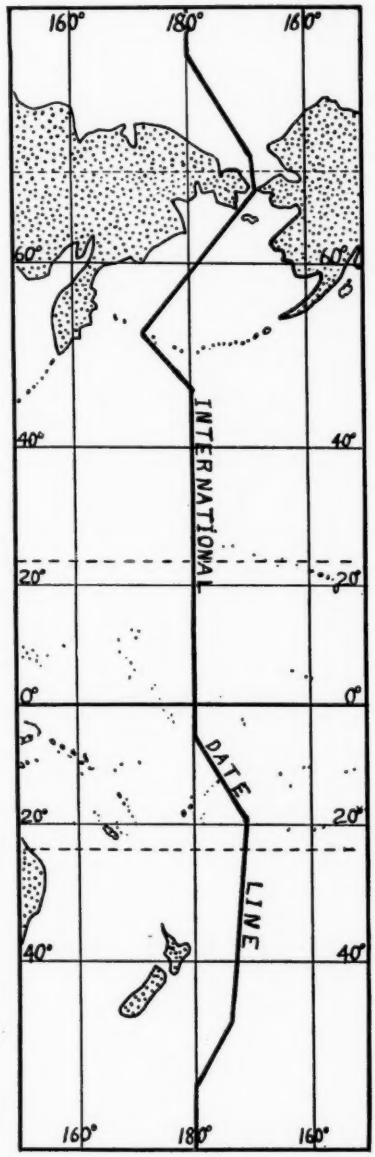
When the one ship of Magellan that was successful in circumnavigating the globe, reached Spain after a three years' absence, the sailors found that, for them, the day was Saturday. But the Spaniards from their own reckoning were celebrating Sunday. That is, in going around the world toward the west, the sailors of Magellan had lost a day. In Jules Verne's story, "Eighty Days around the World," the hero left London toward the east and found upon his return, that, if it was Sunday for him, it was Saturday for the Londoners. That is, he had gained a day in traveling toward the east. Incidentally he won the "bet" that was the occasion of the journey.

As it is sunrise somewhere on the earth each moment of the day; and likewise noon, and also sunset, there is no natural point where the day may be said to begin. But by international agreement, the meridian of 180° has been chosen as the International Date Line, and the new day begins at midnight on this meridian. For all places in the central time belt (C.T.) standard time is based on the local time of the 90th meridian west, or that of New Orleans. New Orleans is therefore 270° west of the I.D.L. and time at the I.D.L. is 18 hours ahead of time in the Central Time Belt. Consequently, for all places in C.T. the actual time when 1934 began was 6. A.M. Sunday, for all places having E.T. it was 7 A.M. Sunday, for M.T. it was 5 A.M., and for P.T. 4 A.M., while it was noon for London, on Sunday.

For an instant at midnight on the I.D.L., the entire world was covered by Sunday, December 31. Beyond this instant two days shared with each other the surface of the earth, Monday, January 1, area constantly increasing; and Sunday, December 31, area constantly diminishing.

At midnight, then on the I.D.L. December 31-January 1 had its origin, and began to push Sunday off the earth. It continued to do so for twenty-four hours, until it reached its own midnight on the I.D.L., at which moment January 2 was born and began to push January 1 off the earth. Thus January 1 was 24 hours in covering the earth and was as many hours in being pushed off the earth by January 2. Or in fact, each day persists from the moment of its origin to its extinction, 48 hours.

As stated above, with the exception of an instant at midnight on the 180th meridian, two days co-exist on the earth. This would be entirely true if the I.D.L. followed the 180th meridian. But the line leaves the 180th meridian at three places.



(1) In order that certain islands in the Pacific that belong to New Zealand shall have the time of New Zealand, the I.D.L. leaves the 180th meridian at about 50° south latitude and extends northeast to about 170° east longitude and 40° south latitude. It then takes a northerly direction to the 20th parallel south; then turns to the northwest and returns to the standard meridian at about 15°S.

(2) In order to enclose the Aleutian Islands that these may have the time of Alaska, the I.D.L. leaves the 180th meridian at about 50° north latitude, and extends northwest to about latitude 55°N. and longitude 170° west. It then turns northeast and cuts the 180th meridian in latitude 60°N.

(3) In order that the eastern point of Siberia may have the time of the great body of Siberia, the line last considered is continued northeast until it cuts the Arctic Circle; it then turns north for a short space and then turns northwest and cuts the standard meridian at the 70th parallel north, and from this point remains on the 180th meridian.

Because of these departures from the 180th meridian, the problem of the "two days" is not so simple as might appear. Let us think of the time on the 180th meridian (which is both 180° east longitude and also 180° west longitude, as being 11:20 P.M. From this meridian west to the meridian of 170°E. it is everywhere (say) Sunday. But between the 170th meridian east and the 180th meridian it is Saturday, save in the two projections from the central

meridian to the east. In both of these projections, Monday is already making its appearance; so that for about 40 minutes, or until it is midnight on that portion of the I.D.L. lying on the central meridian, three days co-exist, Saturday, Sunday, and Monday. When midnight is reached on this meridian for an instant the world is covered by Sunday, save within the small areas in the east projections of the I.D.L. where Monday has begun, and in the triangle on the west that encloses the Aleutian Islands where Saturday still persists. From about 11:20 P.M. 180th meridian time to 12:40 A.M., or for about 80 minutes, portions of three days co-exist upon the earth.

This is an interesting and rather curious fact, but otherwise it has no special significance. The I.D.L. is placed in the middle of the Pacific Ocean as that is the area of least geographical or commercial importance. It is only as ships cross this line that they gain or lose a day, according to the direction in which the ship is heading.*

* Midnight on the I.D.L. is a critical point, being 12:00 P.M. for, say, Sunday; and 12:00 A.M. for Monday. It is really "0" A.M. Monday. This is true for any midnight.

The Brittannica states that the location of the International Date Line was largely due to the influence of the United States.

ANNUAL MEETING
NATIONAL COUNCIL OF GEOGRAPHY TEACHERS

The next annual meeting of the National Council will be held at the University of Pennsylvania December 26-27, 1934. The first session will be Wednesday morning December 26 and the last session Thursday evening December 27. This year the Association of American Geographers will hold its meeting in the same place December 27 to 29 inclusive. Every session of the National Council, except that of Thursday afternoon, will be held in Houston Hall.

The Hotel Pennsylvania, which is near the campus, is to be headquarters of the Council and of the Association of American Geographers. The minimum charge for single rooms is $2.50 and for double rooms $4.00. Make your reservations early in order to get minimum rates.

An attempt is being made to secure convention rates on all railroads entering Philadelphia. Be sure to ask for your certificate when you buy your ticket. In any event, general holiday rates of a fare and a third for a round trip are available on all roads on trains leaving before noon on Christmas Day.

Be sure to be present for the opening of the Wednesday morning session. No one who plans to attend the meeting can afford to miss the reports and discussions of field work to be presented that morning. The other sessions promise to be equally stimulating.

TENTATIVE PROGRAM

Wednesday, December 26, 9:00 A.M.

Greetings
From the University of Pennsylvania

Response
Zoe A. Thralls, University of Pittsburgh

Field Work and Planning

Geography in Relation to National Planning
Earl Hanson, Water Resources Section, National Resources Board, Washington, D.C.

Land Utilization Survey Committee:
Report on Progress and Some Errors Learned
Robert B. Hall, University of Michigan
Methods and Means of Inventory
William J. Berry, State Teachers College, Kalamazoo, Michigan

Some Problems and Results of Field Geography Work with Teachers College Students
Lawrence C. Davis, State Teachers College, Indiana, Pennsylvania

Field Papers at the Warsaw Geographical Congress
Floyd Cunningham, State Teachers College, Florence, Alabama

Opportunities for Field Work in Elementary Geography
Douglas C. Ridgley, Clark University

Surveying the Home State
Rayburn W. Johnson, State Teachers College, Memphis, Tennessee

Wednesday, December 26, 2:00 P.M.

Developing Geographic Abilities and Power: Curricular and Technique Aspects

A Danger Spot in Our Curriculum
David J. Swartz, New York City Secondary Schools

The Key to Independence
Mary Thorp, Rhode Island College of Education, Providence, R.I.

Tools in Use
A Glimpse into Spain—with slides
Vegetable and Fruit Supply of Pittsburgh—graphs and maps
Harriet Carter, Frick Training School, Pittsburgh

Is the High School Fulfilling Its Part?
Russell L. Packard, Concord State Teachers College, Athens, W.Va.

An Opportunity in Political Geography
Robert M. Brown, Rhode Island College of Education, Providence, R.I.

Pre-Geography Learnings from Community Life Studies
Grace Moran, State Teachers College, Farmville, Virginia

Problems in Geographic Education. An Open Forum Conducted by Erna Grassmuck, State Teachers College, Indiana, Pennsylvania

Wednesday, December 26, 8:00 P.M.

Geography and Regional Planning
G. Donald Hudson, Division of Land Planning and Housing, Tennessee Valley Authority, Knoxville, Tennessee

A Council Roll Call by States

Thursday, December 27, 9:00 A.M.
Urban Geography

Rio de Janeiro and Sao Paulo: A Study of Two Contrasted Urban Types
Preston E. James, University of Michigan

Greensboro, a Piedmont Town
Samuel T. Emory, University of North Carolina

The Interpretation of an Urban Map: Green Bay, Wisconsin
Olive J. Thomas, State Teachers College, Whitewater, Wisconsin

St. Louis Today
Lewis F. Thomas, Washington University

Organizing Urban Material for Classroom Use
Ruby M. Harris, Eastern Illinois State Teachers College, Charleston, Ill.

Seventeenth Century Boston—A Youthful City
Mary J. Lanier, Wellesley College, Wellesley, Mass.

Discussion
Alison E. Aitchison, State Teachers College, Cedar Falls, Iowa

Thursday, December 27, 2:00 P.M.
Teacher Education

An Experimental Program of Teacher Education
William Scott Gray, Department of Education, The University of Chicago

Training Graduates of Liberal Arts Colleges
George F. Howe, Teachers College of Connecticut, New Britain, Conn.

Teacher Training Work in Boston
Leonard O. Packard, Teachers College of the City of Boston

An Experiment in Teacher Education at Towson
Pearle Blood, Maryland State Normal School, Towson, Md.

Radio Guidance for Teachers in Service
W. M. Gregory, Director, Educational Museum, Cleveland

Geography a Life Saver
Lucy L. Wilson, Temple University, Philadelphia

What More Can We Do?
George J. Miller, Editor-in-Chief, The Journal of Geography

Thursday, December 27, 7:00 P.M.

Annual Dinner
Presentation of the Distinguished Service Award
Illusion and Reality in Geography
Isaiah Bowman, Director of the American Geographical Society, New York City
Meeting of the Board of Directors

EDITORIAL NOTES AND NEWS

DR. GEORGE B. CRESSEY has returned recently after having spent nearly five months in the Orient where he has been continuing his geographical field work under an appointment from the National Research Council. Much of the time was spent in making a series of detailed studies of land utilization in sample farm areas. Approximately six weeks were spent in making a geographical survey of the physical characteristics of Chekiang and Kiangsu for the National Agricultural Research Bureau of Nanking. This survey will form a basis for their extensive plans in rural reconstruction. These field studies undoubtedly represent a very important practical application of geography. For comparative studies a brief time was spent in the Philippines, Chosen, and Japan.

Erratum. We regret an unfortunate error that appeared in the November issue, which was not discovered until the issue had gone beyond recall. On page 327, W. A. MACKINTOSH should appear as author of "Prairie Settlement, the Geographical Setting" instead of Maclintock. Please make this correction in your November issue as the volume index carries the correct name.

Income from national forests for the fiscal year ending June 30, 1934, amounted to $3,314,691, an increase of 25 per cent over 1933 returns. Timber sales brought in about half of this sum. Fortunately, these sales are so administered as to insure a continuous yield of forest products. Other returns come from water power permits, rentals for summer home and resort purposes, and grazing fees. Twenty-five per cent of these receipts are pro-rated to the counties in which the forests are located to be used for roads and schools, and another 10 per cent for roads within the forests themselves.

Seeds from drought-resisting pasture grasses and from vegetation adapted to check wind and water erosion are the quest of an expedition sent by the U. S. Department of Agriculture to the edge of the Gobi Desert in Central Asia. The seeds are to be sown in parts of our Great Plains whose temperature extremes and rainfall are similar to those of Central Asia.

The Indiana Council of Geography Teachers reports a very successful meeting on October 20. President Oxman of DePauw University addressed the gathering on the topic, "Changing Europe." The Council will continue to function as a department of the State Education Association.

The Minnesota State Council of Geography Teachers met in Minneapolis, November 2. The main speakers of the day were Dr. Russell Whitaker of the University of Wisconsin and Dr. Richard Hartshorne of the University of Minnesota. About five hundred were in attendance.

MISS EDITH PARKER, president of the National Council of Geography Teachers, recently addressed the Wisconsin and Pennsylvania State Council Meetings. John McClintock, instructor in the Edison Junior High School, Harrisburg, and Dr. Ekblaw of Clark University were on the Pennsylvania program. More than a thousand attended the Wisconsin meeting.

The hurricane warning service instituted in 1933 thru radio communication between the Weather Bureau and the ships plying the hurricane belt of the Caribbean and the southern North Atlantic is proving a great success. Ships are constantly advised by radio bulletin of the location, intensity and direction of a hurricane that is in progress, while special signals are displayed when the storm is expected to strike inland, in time to permit people in the threatened area to take all possible precautions. The seasons for these storms is from May to November, inclusive, the greatest number coming in August, September and October.

The October bulletin of the Nebraska Council of Geography Teachers, edited by Rose B. Clark of Wesleyan University, Lincoln, contains a brief article by Fred W. Morrell, Assistant Forester, U. S. Forest Service, on the Government Shelter belt project. A map shows its approximate east-west limits. Dr. Raphael Zon, director of the Lakes States Forest Experiment Station at St. Paul, Minnesota, is directing the technical phases of the project. According to an October release from the Press Service of the U. S. Department of Agriculture, a million dollars from the Emergency Relief Funds has been made available for detailed surveys on soil conditions, tree types, location, and other factors.

GEOGRAPHICAL PUBLICATIONS

J. F. Bogardus. **Europe: A Geographical Survey.** 713 pp. 113 maps, numerous photos and grafs. Harper and Brothers, N.Y. 1934. $4.00.

"Europe, A Geographical Survey" is a textbook from the pen of J. F. Bogardus, Assistant Professor of Geography at the University of Pennsylvania. Its seven hundred pages are replete with textual information, photographs, maps, diagrams and statistical tables. It is an excellent example of a straightforward informational book, and it is noteworthy for its lack of waste words. It makes a distinct contribution thru the division of Europe into economic regions. It is geographic in that it relates the physical setting and human activities. The racial factor is not ignored. It will be liked for its definite, concise style and the completeness of its economic presentation. Mr. Bogardus accomplishes well all that he apparently sets out to do.

And yet one completes a survey of the book without really knowing what Europe is like. The reviewer failed, moreover, to gain any insight into European cultural contrasts. The book leaves one cold. Mr. Bogardus had precedent for writing in this fashion. Most of our regional texts are compilations of statistical matter rather than interpretations. Their descriptions are quantitative rather than qualitative and, no doubt, purposely so. The idea is that the teacher is to make the subject live. But the teacher who understands cultural quality does not need a text. Nevertheless, Mr. Bogardus has done service to both teacher and student even tho he has failed, I believe, to contribute greatly to geographic philosophy; and Europe offers to philosophy such magnificent opportunity.

RODERICK PEATTIE

Ohio State University

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VOLUME XXXIII DECEMBER, 1934 NUMBER 9

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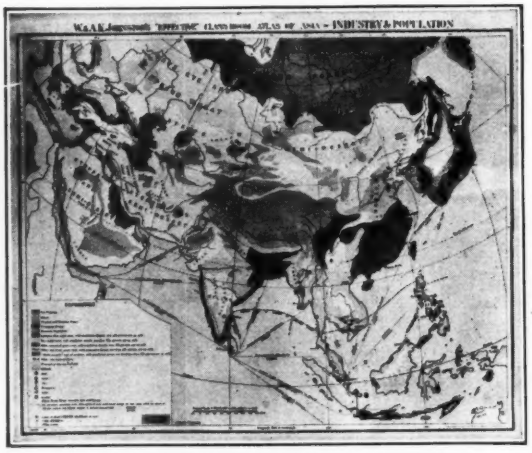

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ANNUAL MEETING
NATIONAL COUNCIL OF GEOGRAPHY TEACHERS

NEVER before has geography had greater opportunities than it has today to function in the solution of current problems. Are we as teachers of geography doing all we can to capitalize these opportunities? Never before has a greater responsibility been ours. Can we not fulfill that responsibility to a greater degree by taking counsel together? Will you not counsel with us at our next annual meeting, Philadelphia, December 26 and 27, 1934?

Details concerning headquarters, meeting hall, accommodations, rates, and program are presented elsewhere in this issue of the JOURNAL.

We believe every session will be rich in suggestions of much practical value to us all in facing the better and ever growing responsibilities as teachers of geography. Even tho the meeting lasts only two days, the program has been so designed that many will participate. Please note in this connection the open forum on Wednesday afternoon and the roll call Wednesday evening. It is hoped that thru such counseling we may each become better acquainted with our colleagues than ever before.

It is a great pleasure to be able to announce each of the speakers named on the program. Our "educator guest" speaker is to be Dr. William Scott Gray, so well known for his researches in teacher education. To call especially to your attention the desirability of coming early and staying late, may we stress the fact that the first speaker following opening formalities is Mr. Earl Hanson of Washington, D. C., and our dinner speaker, at the final session, Dr. Isaiah Bowman?

If you can possible plan to attend, do not fail to come for the first address, to be present at every session, to contribute yourself when opportunity offers, and to hear Dr. Bowman. It may mean sacrifice to come at this season, but can you afford not to make that sacrifice?

EDITH P. PARKER
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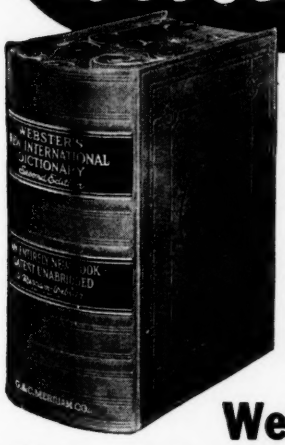

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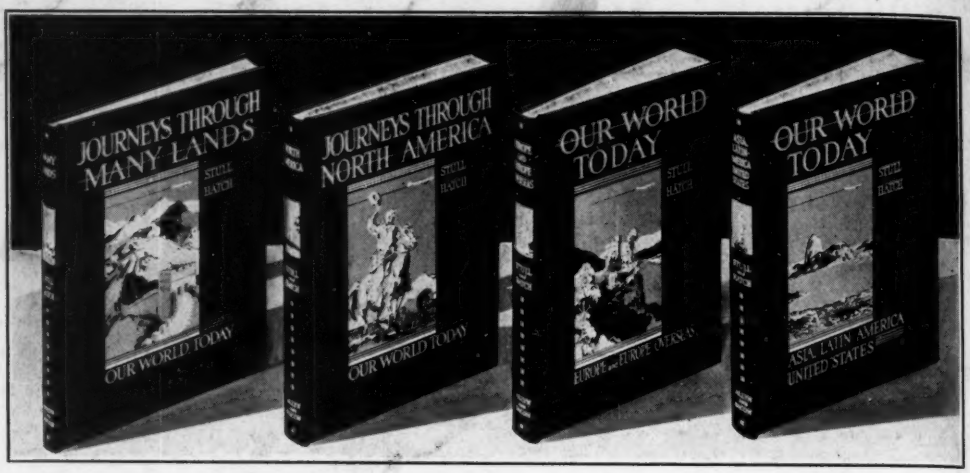

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